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IMPLEMENTATION OF CULTURAL MATHEMATICS "MAIMUN PALACE CONTEXT" ON HIGH SCHOOL STUDENTS' INTEREST IN LEARNING MATHEMATICS

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Abstract

This study aims to explore the impact of the implementation of the culture-based learning model, in the context of the Maimun Palace, on the interest in learning mathematics of high school students. Using a qualitative method, data was collected through a questionnaire distributed to grade XII students of Al-Azhar High School Medan. The results of the study show that this learning model is able to significantly increase students' interest in learning. Students who engaged in Mathematics learning reported increased satisfaction, enthusiasm, and comprehension of mathematics material, compared to traditional lecture methods. In addition, this culture-based learning encourages active interaction between students and teachers, as well as collaboration between students, thereby creating a more dynamic and inclusive learning atmosphere. This study concludes that the Mathematics approach, which integrates elements of local culture, can be an effective alternative learning method to increase students' interest and understanding in mathematics.

*Keywords:**Cultural Mathematics, Maimun Palace, Learning Interests, Ethnomathematics.***

INTRODUCTION

Mathematics is the science that studies shapes, sizes, and relationships between concepts.(Mira et al., nd). In addition to being related to mathematics itself, this discipline also has connections with various other fields of science, including culture.(Azizah et al., 2022). Since elementary school, students are faced with mathematics every day; however, a deep understanding of basic mathematical concepts is often lacking for students.(Putri et al., 2023). Even though they have studied mathematics for more than a decade, students' understanding of the essence and basic logic of mathematics is still limited.(Aprilia Rahmawati & Putri Purwaningrum, 2022). The government has made efforts to improve educational literacy, including through programs that strengthen communication, critical thinking, and cross-cultural social skills. In addition, these programs help students filter and utilize information correctly, providing relevance to everyday life.(Ate & Keremata Lede, 2022).

Teachers play an important role in the student learning process. The teaching methods used and the skills and competencies of teachers can affect the level of student understanding. As explained byMatondang et al. (2023)Current efforts to develop the quality of human resources are directed at improving quality through education. Teacher competence in the learning process does not only include teaching skills, but also competence in managing available resources optimally.(Dwi Nur'aini et al., 2023). Teacher performance shows the existence of a process involving planning,

implementation, and evaluation to create a pleasant and supportive learning environment.(Maulana Akhdiyat et al., 2018).

Mathematics provides many benefits, including improving problem-solving skills, critical thinking, creativity, memory, and literacy.(Davita & Pujiastuti, 2020; Dinata et al., 2022). Students who master math skills tend to be more persistent in facing challenges, showing high resilience to continue trying until they succeed.(Lestari et al., 2018).However, many students consider mathematics as a difficult and boring subject.(Beautiful Maulani & Sylviana Zanthy, 2020). This disinterest is influenced by various factors, including teaching methods, environmental perceptions, and personal problems such as difficulty in understanding formulas or teachers' less than supportive attitudes.(Asikin et al., 2021). This study aims to understand how cultural contexts such as the Maimun Palace can influence students' interest in learning mathematics through the "Matebudaya" approach. This approach is expected to improve students' communication and understanding of mathematical concepts through cultural contexts that students are familiar with. According toSutarto et al. (2021), ethnomathematics emphasizes meaningfulness in learning by integrating students' prior knowledge, helping them see the relevance of mathematical concepts in everyday life. In addition, this method can make it easier for students to learn difficult materials through real examples from local culture.(Rizqi et al., 2022). Studies conductedThe Last Supper (2022)shows that ethnomathematics methods based on local cultural competencies improve students' understanding and have the potential to be applied more widely.

METHOD

This study uses a quantitative method, namely by collecting data on predetermined samples, and interpreting them against the results of the analysis, with data collection in the form of a questionnaire consisting of student responses to the ethnomathematics method. From the data obtained, information will be produced to draw conclusions from the study. Quantitative research methods are used to show relationships between variables, test theories, and seek generalizations that have predictive value. In addition to quantitative methods, this study uses a literature study method, namely collecting data through documents that include various journals, articles, and other related publications.

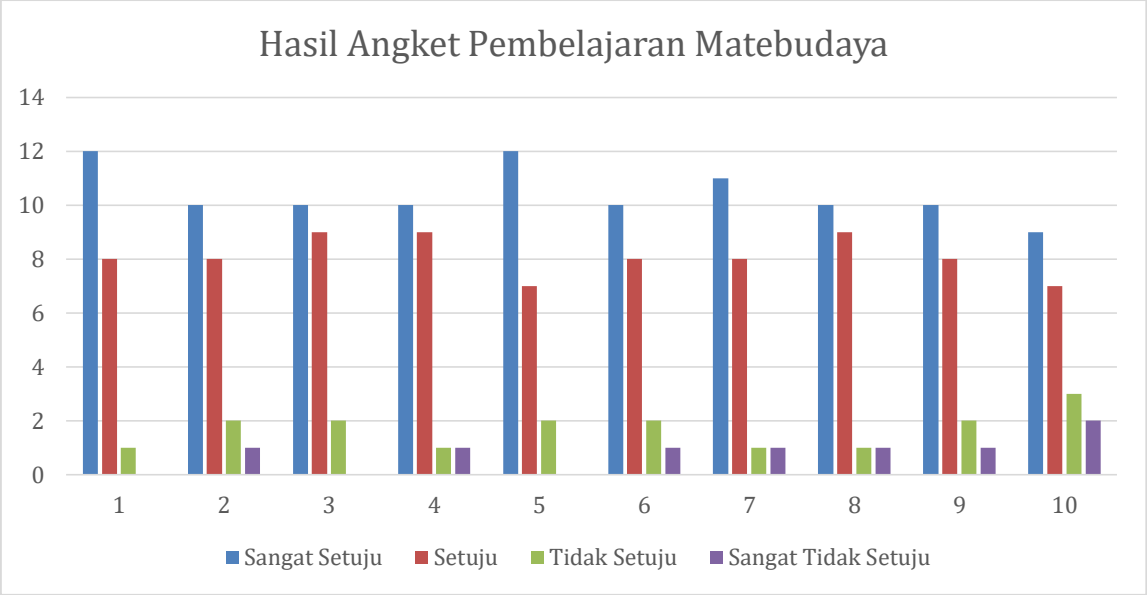
The technique used in this study is using direct practice techniques, then filling out the questionnaire. The subjects of this study were 24 students of class XII Unggulan H with 1 person absent at SMAS Al-Azhar Medan. For data collection, the researcher practiced the material directly, observed, and then conducted a questionnaire to all students of class XII Unggulan H. In this questionnaire, the researcher asked several questions revolving around student satisfaction and opinions with the learning methods experienced, then students were asked to fill out questions regarding the differences in the level of interest in learning mathematics with this method compared to the conventional method (lecture).

No	Question	Strongly agree (4)	Agree (3)	Don't agree (2)	Strongly Disagree (1)
1	I feel satisfied with the existence of cultural mathematics learning	12	8	1	0
2	In learning about cultural problems, my enthusiasm for learning is increasing.	10	8	2	1
3	I agree that the Matebudaya learning model can be applied in other learning.	10	9	2	0
4	I agree that the Matebudaya learning method is an effective and innovative method.	10	9	1	1

5	I feel more concentrated in following the learning with the Matebudaya model	12	7	2	
6	With the Matebudaya learning model, it is easier for me to understand the subject matter of mathematics.	10	8	2	1
7	Learning using the Matebudaya method can make teachers and students more interactive.	11	8	1	1
8	With the Matebudaya model, students can share knowledge with friends while learning is taking place.	10	9	1	1
9	The Matebudaya learning model is more interesting than the lecture method	10	8	2	1
10	I can answer the teacher's questions after studying with the Matebudaya model	9	7	3	2

RESULTS AND DISCUSSION←11pt, bold, CAPITAL LETTERS

From the questionnaire collected, all respondents filled out the questionnaire via the Google form media which was distributed after the teaching and learning activities with the cultural mathematics method were carried out in various forms. The results of all the questions in the questionnaire started with the first question.



In the first question "I feel satisfied with the existence of cultural mathematics learning.". A total of 12 students strongly agree and 8 agree, indicating that the majority of students feel satisfied with the cultural-based mathematics learning approach, such as the context of the Maimun Palace. This shows that learning that integrates local culture can create a sense of satisfaction and increase students' interest in the material presented. A cultural-based mathematics learning approach, such as using the local cultural context of the Maimun Palace, has been shown to increase student satisfaction and interest. A study fromKurniawan et al. (2024)shows that the integration of cultural artifacts and traditions into mathematics learning can foster students' interest and engagement with the material, helping them see the relevance of mathematics in everyday life.

The results of the statement "In learning problem-based mathematics, my enthusiasm for learning has increased." As many as 10 students strongly agreed and 8 agreed, indicating that the use of cultural context in problem-based learning can increase students' enthusiasm for learning. The context of the Maimun Palace as part of the local culture seems to make the material more relevant to students, thereby increasing their motivation. This is in accordance with research fromAmerstorfer & Freiin von Münster-Kistner (2021)which emphasizes that problem-based learning can increase student engagement and motivation, especially through interactive activities and authentic problem solving that is culturally relevant. Students are more motivated because the material becomes more meaningful and relevant to their context, such as the use of the local cultural context of the Maimun Palace which can increase students' interest and enthusiasm for learning. "I agree that the Matebudaya learning model can be applied in other learning." As many as 10 students strongly agreed and 9 agreed, indicating that students see this approach as applicable to other subjects or learning. This indicates that culture-based learning, such as using the Maimun Palace context, has the potential to be a flexible and applicable method in various educational contexts. The results show that students see the culture-based learning model, such as "Matebudaya" which integrates local cultural contexts such as the Maimun Palace, as an approach that is not only effective for mathematics, but also has the potential to be applied to other subjects. This is supported by a number of experts in education who emphasize that culturally responsive teaching does have flexibility and effectiveness that extends across various educational contexts. According toNur et al. (2020) Teaching methods that take local culture into account can help increase student engagement and the relevance of teaching materials, especially when students feel more connected to the content because of its connection to their identity and culture.

Culture-based learning not only enhances understanding, but also allows for application to other disciplines, creating a more meaningful learning environment.(Ridha et al., 2019).Furthermore, other studies have shown that integrating cultural approaches across subjects provides opportunities for students to understand the relationship between their personal experiences and academic content, which can be effectively applied beyond the single-subject classroom setting. (Hadijah et al., 2019). Thus, this approach can be adapted to various educational contexts to enrich the overall learning experience of students. I agree that the Matebudaya learning method is an effective and innovative method". 10 students strongly agreed and 9 agreed, indicating that students considered this approach as an effective and innovative method.

The use of cultural contexts such as the Maimun Palace may be considered to bring a new nuance to learning mathematics, making it more interesting and innovative. Expert support for the effectiveness and innovation of culture-based learning can be seen in the literature on Culturally Responsive Teaching (CRT). According to researchers, CRT is a method that not only increases the relevance of learning but also creates a deeper and more meaningful learning experience by connecting teaching materials with students' cultural backgrounds. This makes students more motivated and involved in learning, which is considered important in efforts to improve academic achievement and student character development.(Bassey, 2016). Other studies have also shown that integrating local cultural elements into learning increases student engagement and learning effectiveness, as students feel the learning environment is more inclusive and relevant to their everyday experiences. In addition, the application of CRT supports learning that not only develops academic understanding but also critical thinking skills and social awareness.(Abdalla & Moussa, 2024). With the support of these studies, the Matebudaya model that you apply is expected to have a positive impact in enriching students' mathematics learning experiences through the integration of cultural aspects that they recognize and appreciate. "I feel more concentrated in following the learning with the Matebudaya model". A total of 12 students strongly agreed and 7 agreed, indicating that this method helps students improve their concentration in learning.

Possibly, the use of a familiar local cultural context makes students more focused in understanding the material presented. According to this study, a culture-based approach such as

"Matebudaya" can help students to concentrate more on learning. This approach relies on the use of a cultural context that is familiar to students, which makes them feel more comfortable and connected to the material being studied.Nofriyandi et al. (2023) stated that culturally relevant teaching can increase student engagement because they feel the learning environment supports their identity and background. This helps students to be more focused and feel intellectually involved in the learning process. This approach also helps students feel valued in their cultural diversity and creates relevant connections to their life experiences, thereby strengthening their concentration and interest in the lesson. Thus, students who learn in an environment that values their cultural identity are better able to focus and are more motivated to achieve good results. (Sartika & Semiaji, 2024). "With the Matebudaya learning model, I find it easier to understand the subject matter of mathematics". As many as 10 students strongly agreed and 8 agreed, indicating that culture-based learning helps students understand mathematical concepts better. This approach can help students connect abstract mathematical concepts with concrete things in their environment, such as the Maimun Palace. Research shows that a culturally responsive learning approach, such as the Matebudaya model that integrates the local context (Maimun Palace), can make it easier for students to understand mathematical concepts.(Brown et al., 2019)stated that culture-based teaching allows students to associate abstract concepts with cultural symbols and values they are familiar with, which enhances their mathematical understanding. Thus, cultural integration in mathematics learning provides a concrete context that helps students internalize the material "Learning using the Matebudaya method can make teachers and students more interactive". A total of 11 students strongly agreed and 8 agreed, indicating that this method is able to improve interactions between teachers and students. Maimun Palace as a learning context may create a more dynamic and interactive classroom atmosphere, so that students are more active in asking questions or discussing. According toAnyichie et al. (2023)This approach encourages effective cross-cultural communication, strengthens relationships in the classroom, and encourages student engagement. By bringing in local cultural elements, such as the Maimun Palace, teachers can create a relevant learning atmosphere and support active student participation, thereby deepening classroom interactions.

"With the Matebudaya model, students can share knowledge with friends during learning". As many as 10 students strongly agreed and 8 agreed, indicating that this approach encourages students to share knowledge with classmates. Familiar cultural contexts, such as the Maimun Palace, make it easier for students to discuss and exchange ideas, increasing collaboration in the classroom. This is in accordance with researchAbdulla & Moussa (2024) Culturally responsive teaching strategies enhance student-to-student interactions by using local cultural elements that are relevant to students, creating connections between their learning experiences and their cultural backgrounds. Culturally responsive teaching also enhances student engagement through collaborative activities that reflect cultural values they are familiar with, so students feel comfortable and motivated to contribute to class discussions and work collaboratively with peers.(Abdalla & Moussa, 2024).

"The Mathbudaya learning model is more interesting than the lecture method.". A total of 10 students strongly agreed and 8 agreed, indicating that this approach is more interesting than the traditional lecture method. Learning that involves local cultural elements makes mathematics feel more alive and relevant, thus increasing student interest.Ladson-Billings (2021)in his research stated that culturally relevant teaching can increase student interest, because they feel their values and experiences are recognized and used as a bridge to learn academic materials. This shows that culturally based contextual teaching has a greater appeal to students. "I can answer the teacher's questions after learning with the Matebudaya model." A total of 9 students strongly agreed and 7 agreed, indicating that this learning model has a positive impact on students' ability to answer questions. Most likely, the use of local contexts such as the Maimun Palace helps students understand and internalize the material better, so they are more confident in responding to teacher questions.

Experts support that culturally relevant teaching, such as the Matebudaya model that has been implemented, increases interaction between students and active involvement in the learning

process.(Anyichie & Butler, nd)developed a culturally responsive self-directed learning framework that demonstrates how integrating students' cultural backgrounds into instruction can support their engagement in cooperative learning and the construction of new knowledge. Research shows that when students engage in learning that is relevant to their cultural experiences, they are more motivated to actively participate, including sharing knowledge with peers and discussing their understanding in a supportive environment. Such models are considered effective in increasing student engagement and understanding.

CONCLUSION

This study shows that the application of culture-based mathematics learning with the local context of the Maimun Palace can significantly increase students' interest in learning mathematics. Students responded positively to the Matebudaya learning model, as seen from the high level of satisfaction, increased learning motivation, and increased ability to understand and answer teacher questions. This approach has also proven to be more interesting than conventional lecture methods, because students feel that learning becomes more alive and relevant to their daily lives.

In addition, the integration of cultural contexts such as the Maimun Palace in mathematics learning encourages more active interaction between students and teachers and strengthens collaboration between students. Students not only find it easier to understand abstract mathematical concepts, but also are more confident in discussing and exchanging ideas with classmates. Thus, the Matebudaya method has the potential as an alternative to effective and applicable mathematics learning in increasing students' interest and understanding of mathematics materials. This study contributes to the development of learning strategies that not only improve academic understanding but also integrate local cultural values to provide a more meaningful learning experience. In the future, this method is expected to be adapted to other subjects or applied in various cultural contexts to enrich the learning process in schools.

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